

An In-Depth Look at ROI

A Riverbed White Paper

INTRODUCTION — DOING THINGS DIFFERENTLY

As the economy turns sour, and IT budgets remain flat or get reduced, doing more with the infrastructure you have has never been more important. But investing even more money in the same old networking infrastructure, storage, servers and bandwidth is not going to help you reach your strategic goals. Riverbed offers a compelling and powerful return on investment in hard dollars, and a way to leap past the obstacles preventing you from reaching your IT objectives.

Here are just some of the ways our Steelhead appliances can help your company save real money today:

- **Save WAN Bandwidth.** Avoid upgrading expensive WAN links to branch offices, or decommission expensive over-provisioned links around the world.
- **Consolidate IT Infrastructure.** Reduce or eliminate complex and outdated branch office IT infrastructure through server consolidation — less servers and software to backup, patch, protect & manage.
- **Lower IT Services Costs.** Reduce or eliminate your outsourced server management bill at branch offices.
- **Reduce Media Management Costs.** Reduce or eliminate off-site media management / data storage for most sites around the world.
- **Enable Datacenter Consolidation.** Make your data center consolidation project more successful by helping you avoid degradation in end-user application performance after local data centers are eliminated. This can also reduce your real estate investments and operating expenses.
- **Reduced Real Estate Expenses.** By enabling more people to work from home with the same LAN-like experience, you can radically reduce the office space required to support your business.
- **Reduce RTO / RPO.** Improve your business continuity process by accelerating backup and replication which means shorter RTO and RPOs across longer distances, without adding more expensive bandwidth.
- **Reduce Power and cooling Requirements.** Reduce power and cooling requirements by having fewer servers in branches, fewer data centers and getting better utilization out of fewer centralized servers.
- **Reduce Business Travel.** Reduce travel requirements by making global collaboration over long distances to really work well, even for data-intensive CAD / CAE apps.
- **Reduced Facilities Costs.** Reduce facilities expense by making enterprise applications work for home-based workers just like they do at headquarters — which allows more people to work from home.

Results: 61% IRR; \$3 Million NPV; a One Year Payback — Without Counting any “Soft Benefits”

Riverbed can help you simplify and consolidate your IT infrastructure, improve security and business continuity plans, save money and at the same time, improve the performance of your applications. This paper shows how a hypothetical mid-sized enterprise with 230 sites around the world can achieve a 61% IRR and \$3 million NPV on a Riverbed deployment, and get payback in 1 year — without considering any soft benefits at all. When those soft are taken into account, the ROI can be much higher.

While this paper is focused specifically on cost savings, those same Steelhead appliances you deploy to save money will also help you in two other key areas: “business agility” and productivity. Business Agility is simply the notion that your business should not be tied down by your data and infrastructure. If you need to open a new branch in Asia, you should be able to do that without thinking about whether you need to build a local data center to support it. You should be able to do it without thinking about the risks of storing data in-country. Riverbed gives you the performance that makes you agile — able to respond to business conditions as quickly as possible.

Even if you don't consider the monetary value of those aspects of a Riverbed deployment today, you will reap the benefits anyway; you can dramatically simplify your IT infrastructure and at the same time prepare your organization to meet the future needs of the business. At the same time, you'll be helping your business users become more productive, collaborate better and deliver products and services faster.

Doing More with Less

From networking to storage, and from data centers to mobile workers, we can help you get as much as possible out of the investments you have already made over the last five to ten years. In fact, we can not only do that, but actually help you do more

with less: less servers, less bandwidth, fewer replicated databases, less storage, less power consumption. In the near future, we'll also be helping you store less data with our new product known as Atlas™ which will be introduced in the 1st half of 2009.¹

This paper details exactly how an enterprise can save hard dollars by deploying Riverbed's solutions, and at the same time improve performance of key applications which further improves the return on investment. The ROI is based on a 230 site deployment of Riverbed equipment, along with 2,500 concurrent Steelhead Mobile licenses which should support up to 10,000 mobile users (Riverbed's award winning mobile client version of its RiOS software²)

Summary of Three Year ROI

The return on investment has many components, and they are all detailed in this paper.

To give you a preview, the summary is shown here for this deployment. Since different people use a variety of metrics to measure ROI, we look at it in three ways:

- 1. Net Present Value (NPV)** of the project — A positive value (greater than zero) generally means that the project should be undertaken. Of course the NPV depends on the discount rate used to calculate the present value of future cash flows; in this model we used 7%. In more normal economic times we might use 10% or 12%, but returns are lower today than before, so a lower discount rate may be justified.
- 2. Internal Rate of Return (IRR)**. The IRR is the actual return on investment for a given set of future cash flows — it's essentially what you expect to "earn" by investing in the project.
- 3. Payback Period** — Payback is the simplest method, and a popular one. Basically it compares the up-front investment against the dollar return, and simply measures how long it takes to recoup the investment.

A note on productivity and other "soft" ROI components

We have not included any "soft" benefits in this ROI calculation — although many Riverbed customers purchase our products primarily to improve application performance and productivity — but we understand that calculating the ROI on those soft benefits can be difficult. However, in your own thinking about the benefits of Riverbed's solutions, those soft benefits should be included because they may end up being the primary reason for purchasing. There is more information about the soft benefits later in this paper.

ROI Summary for 234 site deployment	(Up Front)	Year 1	Year 2	Year 3
Total Annual Cash Flow	(\$3,386,808)	\$3,395,254	\$2,173,072	\$1,892,813
Present Value of Cash Flows	(\$3,386,808)	3,086,594.91	1,795,927.40	1,422,098.28
Net Present Value (NPV) of Project	\$2,917,813			
Internal Rate of Return (IRR) of Project	61%			
Payback Period	12.0	Months		

Note: These results are based on a hypothetical, but realistic, set of assumptions about costs of bandwidth, servers and other factors. If you are interested, Riverbed can provide you with the ROI model used to calculate these results.

In this project, again ignoring all soft benefits - *which would add significantly to the return on investment* — the NPV is \$3.1 million. The internal rate of return (IRR) is 61%, well over any conceivable internal hurdle rate used to evaluate capital projects, and the payback is just under one year. At the end of this paper we'll describe the other softer, because they should not be ignored in the final decision. Even in very difficult economic times this is a compelling proposition.

Up Front Investment

The up-front investment is based on the list price of enough appliances to fully deploy the hypothetical enterprise across 230 sites. The price we used is the list price, less 10%, of Riverbed's products, along with the expected support and service costs over a three year period. The price you pay depends on which partner or reseller you work with to buy our products, and what services they provide, so your price will obviously vary from this hypothetical example. In this scenario, the customer deployed a variety of Steelhead appliances at all of their sites, for a total up front investment of \$3.4 million.

The specific models deployed in this scenario were:

¹ Atlas is a new class of appliance that will deduplicate primary file storage, which will reduce file storage requirements by 3 to 10-fold. Atlas will be available sometime during the first half of 2009.

² RiOS stands for Riverbed Optimization System, the underlying software that powers both Steelhead appliances and Steelhead Mobile.

Small Branch Offices
Steelhead 200
Steelhead 250-M
Steelhead 520
Steelhead 550-M
Medium Branch Offices
Steelhead 550-H
Steelhead 1020
Steelhead 1050-H
Large Branch Offices / Regional Data Centers
Steelhead 2050-H
Primary Data Centers
Steelhead 6020
Interceptor Model 9200 (TCP Load balancers — HA configuration)
Steelhead Mobile Controllers (2 units to support up to 4,000 concurrent mobile users)
Central Management Console To manage up to 500 Steelhead appliances from one place

Obviously with 26 different models of Steelhead appliances (as of November, 2008), there are many different options for you to consider — the exact models deployed at your company will depend on the bandwidth to your sites, the number of employees, the types of applications used (different applications have different workloads) and other factors. Riverbed's sales engineers and partners will work with you to specify the appropriate models for your business.

The ongoing annual support charges for this deployment are assumed to be 18% of the list price of the products.

ROI Components

Bandwidth savings

The easiest benefit to quantify is bandwidth. Many enterprises incur significant bandwidth costs, especially if they have many remote branches, operate overseas, use satellite links (or all three). One of the key technologies in Riverbed's solutions is data deduplication, which eliminates all redundant WAN traffic — in many companies that can be 60% to 95% of the data, and in disaster recovery applications it can be as high as 98% because the data is so repetitive day to day.

The financial savings comes in two ways:

1. **Avoid the cost of regular bandwidth upgrades.** Riverbed has many customers who have avoided bandwidth upgrades completely since purchasing Steelhead appliances. Some of those customers purchased their gear three or four years ago, and despite the growth in their companies, the increase in data and in data intensity of their applications, they have been able to avoid buying more bandwidth from carriers.
2. **Decommissioning (turning off) over-provisioned links.** Perhaps less common, but still a regular occurrence, is for customers do reduce the bandwidth of links to branch offices. Many times network managers have purchased more bandwidth in an effort to improve application performance, only to find that it didn't make much difference.³ By deploying Steelhead appliances, many customers find they can get better performance even after reducing the commissioned bandwidth.

The ROI model assumes that the small offices currently pay about \$500 per month for bandwidth, the mid-sized offices pay about \$1,000 per month, and the larger sites about \$3,500 per month. Since many companies pay much more for bandwidth, especially for private WAN connections, trans-oceanic or satellite links, these are conservative assumptions.

We assumed that all branch offices were considering a bandwidth upgrade, and that the upgrade would add 50% to the monthly bandwidth bill. Furthermore, we assumed that by deploying Steelhead appliances you would avoid 100% of the cost of the proposed bandwidth upgrade.

³ See Riverbed's white paper "It's not about the bandwidth" for an explanation of this issue.

Savings on bandwidth cost avoidance: \$4.3 million over three years.

Branch Office Server Consolidation

The next key area for savings with Riverbed is on removing some (or all) of your branch office IT infrastructure. Normally, when IT wants to consolidate things like file or email servers, they are doing so for good reasons. For example, servers in branch offices require backing up the data on them; installing, maintaining and protecting software; ensuring that only authorized people have access to the information on those servers; preventing theft of data or hardware; ensuring that backup processes are followed properly, often by non-IT employees who may not appreciate the importance of proper data protection.

By eliminating the effect of distance on application performance, the justification for keeping branch office servers at all is largely gone because end users usually won't notice any more if you those servers are centralized.

There are two complementary approaches to consolidation with Riverbed:

1. Physically remove servers from branch offices and put them in your data center(s) - or more likely, move the data or applications that reside on them to more powerful centralized machines in the data center, or:
2. Use the Riverbed Services Platform (RSP)⁴ to deploy the branch office software directly onto your Steelhead appliances. This latter approach is particularly useful for services that must remain local to the branch like DNS / DHCP, print services, UTM and others.

Either way, you save hard costs immediately and simplify your IT infrastructure which meets your goals, without compromising your user community.

The types of IT infrastructure that can be consolidated includes:

- File servers (Windows or UNIX)
- Exchange Servers
- SMS servers
- Specialized content caches (e.g. PLM, content management, etc...)
- Tape auto-loaders or other local backup equipment

The places you can save money directly include

- Hardware replacement costs
- Software licenses & maintenance
- Backup tapes
- Off-site media management / data storage
- Outsourced server maintenance / management
- Local on-line backup services / software
-

McKinsey estimates that the annual cost of a server is \$6,500 in 2008, and that it will decrease to \$4,700 in 2010⁵ - of that cost, 38% is non-labor cost and 62% is labor. In our model, we used monthly costs of \$200 to \$350 per month (\$2,400 to 4,200 per year) which are conservative compared to McKinsey's estimates.

In addition, you will accrue other benefits that are harder to quantify, yet just as valuable:

- Keeping data in fewer places means lower costs, less complexity and higher security
- Fewer copies of data dramatically reduces the risk of error in multi-user collaborative environments — revision control is much easier when there are not multiple copies of files

Types of infrastructure to be consolidated. In this ROI model, we made assumptions about only three types of servers that are typically found in branch offices: File servers, Exchange servers and Tape backup autoloaders. We ignored the other types denoted above to keep it manageable; more types of servers in your branch offices, the ROI would be even higher.

File servers. We assumed only one file server per branch office. Often there will be several file servers in a single branch, and in larger facilities you may have five to ten or more. This simplifying assumption again makes the ROI in this model very conservative. We assumed that you would consolidate all the file servers in the branch offices.

⁴ RSP is a virtualized environment within your Steelhead appliances. You can install software packages on top of the RSP and run them there instead of on a dedicated server in your branch office. RSP requires a separate license, and may require nominal upgrades to disk or memory that are not reflected in this ROI example.

⁵ McKinsey Quarterly, Vivek Pandit, October 2008.

http://www.mckinseyquarterly.com/Information_Technology/Management/A_fresh_wind_for_offshoring_infrastructure_management_2217

Exchange servers. We assumed that only the larger offices had Exchange servers — 10 out of the 234 sites. In many customers, they have accumulated dozens of email servers over the years as the business expanded. Again, this is a simplifying assumption.

Tape backup equipment. We assumed every site that had a server (all of them) also has local tape backup equipment. Again, we assumed that were it possible, you would rather do backup over the WAN and therefore eliminate all the local tape backup systems. Along with eliminating tape backup equipment, you also eliminate the cost of the actual tapes, and the cost of the off-site media storage and management. You also eliminate the risk of tapes being lost along with sensitive or confidential data about your business or even worse, your customers.

Power Savings. According to the US government, the average commercial cost for electricity in the US is \$0.076 per KWH.⁶ Commercial servers consume between 100 and 5,000 watts⁷, depending on whether they are low end, mid-range or high end scientific computers — we assumed for the purposes of this model an average consumption of 250 watts. By eliminating branch office servers and moving the functionality to existing centralized machines, a significant reduction in worldwide power can be realized, which translates directly into savings. In this model, we saw \$73,000 per year in power savings alone. In the model, we did not include cooling cost savings, which would be incremental to power savings.

Total savings from IT consolidation: \$4.5 million over three years.

Capital Replacement

Another key area of benefit is avoiding capital replacement. Obviously if you consolidate data from servers in branch offices, those servers no longer exist and therefore they don't have to be refreshed every three or four years. That cost savings can be significant as well. In our model, we assumed that all the consolidated servers (file, email and backup) that was consolidated would have been replaced, at considerable expense, once over the three year life of the model.

Since that refresh is no longer necessary, that savings goes into the model. We assumed that the replacement cost for servers was \$2,000 for small offices, \$5,000 for mid-sized sites and \$10,000 for larger sites — all reasonable assumptions (hardware only — don't forget that maintaining servers involves significant labor and support expenses). While your numbers may be different, it's likely you will see significant savings from avoiding capital replacement for your branch office infrastructure.

Total savings in avoiding server refresh: \$910,000.

Quantifiable Application Performance Benefits

While this ROI model does not capture it, if you have a business with very large numbers of employees using a specific application, the hard ROI for faster application performance can sometimes be huge. Riverbed has a customer with 5,000 call center agents using Siebel CRM, operating 24x7. By deploying Steelhead appliances, they were able to reduce average call handling time (AHT) by 20 seconds — because of the large number of agents, that translated directly into \$20.5 million in savings on headcount and bandwidth over three years — achieved with a \$3 million investment in Riverbed equipment.

Soft Benefits

As we mentioned, the ROI model did not count any of the soft benefits — many Riverbed customers purchase Steelhead appliances *solely* for those reasons — better collaboration, faster performance, etc... Rather than try to attach a specific value to those benefits, this section just highlights some of the more common ones.

Multi-site collaboration — Key Benefit: *Up to 100x faster performance for end users.*

Many enterprises rely on teams that are not co-located in the same building or campus. Examples include distributed software development; engineering development teams; consultants who work at client sites; manufacturing operations in developing regions of the world. Using applications like Product Lifecycle Management (PLM), CAD/CAE, document management applications (e.g. SharePoint) that are data-intensive can be very painful over long distance links with limited bandwidth. Your end users will be able to reduce product development cycles, reduce the time to collaborate, get more time to focus on what's important, and spend much less time every day waiting for data to be sent or arrive.

Better Revision Control — Key Benefit: *Keep only one copy of documents in one place.*

Companies that rely on distributed collaboration confront the revision control problem all the time. While content management or document management systems are very effective at dealing with the issue in a LAN environment, when a WAN is involved the performance often degrades considerably. To make it work in those circumstances many companies end up deploying replicated systems, content caches or using manual processes to pre-position content around the world — and that leads to errors

⁶ http://www.eia.doe.gov/cneaf/electricity/epm/table5_6_a.html

⁷ <http://enterprise.amd.com/Downloads/svrpwrusecompletefinal.pdf>

propagating without detection which can be very costly. By centralizing files into one site without hurting end user performance, Riverbed enables the best of both worlds.

Better Data Protection — Key Benefit: *Less risk of losing confidential data.*

Many companies back up branch office servers in the branch office using locally deployed tape backup systems like autoloaders. The problems have to do with either processes not being followed correctly or completely, or with backup tapes being lost on site, or on the way to and from the off-site data storage facility. By backing up data over the WAN using Steelhead appliances, you can ensure complete backup while reducing or eliminating the risk of losing the backup tapes in transit.

Fewer Complaints — Key Benefit: Focus on what's important — simplifying and consolidating.

Complaints from end users about application performance can be one of the drivers that prevents you from consolidating and simplifying your IT infrastructure. By deploying Steelhead appliances you can ensure that you consolidate what you want when you want, and you don't have to worry about end users derailing your IT strategy. Oh, and you'll get fewer late night phone calls too.

Summary

In total, deploying Steelhead appliances and Steelhead Mobile in this scenario resulted in a NPV of \$3 million dollars and an IRR of 61%, along with a one year payback, all without relying on any "soft" benefits — in fact those soft benefits are the key drivers for many Riverbed customers, but even without them you can be confident that deploying Riverbed solutions in your company can help you achieve your strategic IT goals, while ensuring that your company is operating as efficiently as possible. Many Riverbed customers see paybacks well under six months, and in some cases as short as one or two months when IT costs are particularly high.

That said, for most Riverbed customers cost savings isn't really the primary driver for the investment. Instead it's the opportunity to truly transform the IT organization by delivering higher quality of service at a lower cost, and enabling projects that were impossible before. Riverbed can multiply the effectiveness of your current IT investments.

For more information, please visit www.riverbed.com, contact your local reseller or Riverbed representative. We would be happy to work with you to calculate the ROI for a project at your company.

About Riverbed

Riverbed Technology is the performance leader in wide-area data services (WDS) solutions for companies worldwide. By enabling application performance over the wide area network (WAN) that is orders of magnitude faster than what users experience today, Riverbed is changing the way people work, and enabling a distributed workforce that can collaborate as if they were local. Additional information about Riverbed (Nasdaq: RVBD) is available at www.riverbed.com.

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